EXHIBIT "C"

SERI SEROLOGICAL RESEARCH INSTITUTE

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Mark Barrett
Attorney at Law
P.O. Box 896
Norman, OK 73070

Peter A. Hanano, DPA
Department of the Prosecuting Attorney
County of Maui
150 S. High Street
Wailuku, Maui, HI 96793

SERI Case No. M'5324'01
Civil Case No. 04-00743 DAE-LEK
Victim: Vilmar Cabaccang
Suspects: Taryn Christian
James Burkhart
Other: Serena Seidell

ANALYTICAL REPORT

On October 10th 2007, fourteen items of evidence were received in five separate boxes from Evidence Specialist Anthony Earles, Maui Police Department, via Federal Express (#'s 8452 4650 6820, 6875, 6864, 6853 and 6831). On April 15th 2008, one further item of evidence was received from Anthony Earles via Federal Express (#8654 0222 8159). They were analyzed as follows:

ITEM 1 SWABS FROM SIDEWALK (#12)

This consists of four swabs labeled #12 (SERI item 1-1), 12A (item 1-2), 12B (item 1-3) and 12C (item 1-4). The first 3 swabs (1-1 through 1-3) have red brown staining which gave positive presumptive tests for blood. Each swab had been previously sampled. Item 1-4 consists of an intact swab, with no obvious staining, which gave a negative presumptive test for blood. Samples from each swab were extracted for DNA content and amplified using the Polymerase Chain Reaction (PCR). The resulting products were subjected to genetic marker analysis. The results are in the table below.

ITEM 2 KNIFE (#1)

This consists of a black metallic handled knife with a double edged forked blade. The handle is approximately 4 inches long and the blade approximately 5 inches long by 1 ¼ inches wide. The groove in the blade was marked "This site for DNA – JF." No obvious blood stains were present but the area gave a weak positive presumptive test for blood. The area (2-2) was swabbed and extracted for DNA but no human DNA was detected. Between the fork of the blade there were areas of light brown staining which gave a positive presumptive test for blood. This area (2-1) was swabbed and extracted for DNA. The resulting extract was amplified by PCR and subjected to genetic marker analysis. The results are tabulated below. The handle gave a weak positive presumptive test for blood but was swabbed and extracted for DNA. Trace amounts of DNA were detected but gave inconclusive results for typing. A second swabbing was made and extracted for DNA and subjected to genetic marker typing. No results were obtained.

ITEM 3 SCREWDRIVER (#3)

This consists of a black handled "Phillips" screwdriver. The plastic handle is approximately 2 ¾ inches long and the blade approximately 3 ¾ inches long. There is heavy brown staining in and around the "Phillips" head which gave a positive presumptive test for blood. This area, 3-1, was extracted for DNA content. The handle was also stained with blood but two areas, the front (3-2) and back (3-3), were swabbed and extracted for DNA content. The results were inconclusive so the three areas were re-swabbed, extracted for DNA, amplified by PCR and subjected to genetic marker analysis. The results are tabulated below.

ITEM 4 KEYS (#2)

This consists of four items on a key ring. Green/Gold 'C' (4-1), a Honda car key, a transmitter and a key divider. There were no obvious bloodstains on any item except the Green/Gold 'C' which gave a positive presumptive test for blood in one small area. This area was swabbed and extracted for DNA content and amplified by PCR. The resulting products were subjected to genetic marker analysis. No conclusive results were obtained.

ITEM 5 SWABS FROM SCENE (#10 & 11)

This consists of four previously sampled swabs labeled 10 (SERI item 5-1), 10A (item 5-2), 11 (item 5-3) and 11A (item 5-4). All have heavy brown staining which gave a positive presumptive test for blood. A sample from each was extracted for DNA, amplified by PCR and subjected to genetic marker analysis. The results are tabulated below.

ITEM 6 CLOTHING – SERENA SEIDELL (#5)

This consists only of a black bikini halter top size 'M' (There were no shorts in the evidence bag). Three areas of dark staining were observed on the front of the halter top which gave positive presumptive tests for blood. A sample from each area was extracted for DNA, amplified by PCR and subjected to genetic marker analysis. The results are in the table below.

ITEM 7 JACKET FROM SCENE (#6-8)

This consists of a black checkered long sleeve jacket with a "Go Big Stay Loose" label. Brownish stains are present throughout the jacket and appear diluted and moldy. The surface of the jacket gives a positive presumptive test for blood but there are no defined areas of staining. Three small areas on the back of the left sleeve appear more defined and gave positive presumptive tests for blood. These three areas 7-1, 7-2 and 7-3 were extracted for DNA, amplified by PCR and subjected to genetic marker analysis. The results are tabulated below.

ITEM 8 BASEBALL CAP (#2)

This consists of a blue baseball cap with "Michigan" on the front. Inside the brim of the cap is extensive green black staining which gives positive presumptive tests for blood. Five small blood stains from inside the brim and one faint stain located on the outside of the brim were extracted for DNA content, amplified by PCR and subjected to genetic marker testing. The results are in the table below.

ITEM 9 REFERENCE – SERENA SEIDELL

This consists of two pieces of bloodstained gauze. A sample was extracted for DNA, amplified by PCR and subjected to genetic marker analysis. The results are in the table below.

ITEM 10 REFERENCE HAIR SAMPLES – TARYN CHRISTIAN

This item was not examined.

ITEM 11 REFERENCE – TARYN CHRISTIAN

This consists of two pieces of blood stained gauze. A sample was extracted for DNA content, amplified by PCR and subjected to genetic marker analysis. The results are tabulated below.

ITEM 12 REFERENCE HAIR SAMPLES – JAMES BURKHART

This consists of a bindle containing loose hairs and two microscope slides with mounted hairs. A small number of loose hairs containing roots were sampled, extracted for DNA and amplified by PCR. The resulting products were subjected to genetic marker analysis. The results are in the table below.

ITEM 13 REFERENCE HAIR SAMPLES – VILMAR CABACCANG

This item was not examined.

ITEM 14 REFERENCE – VILMAR CABACCANG

This consists of two pieces of bloodstained gauze. A sample was extracted for DNA content, amplified by PCR and typed. The results are tabulated below.

ITEM 15 KNIFE SHEATH

This item will be the subject of a future report.

TABLE OF RESULTS

ITEM	DESCRIPTION	D8S1179	D21S11	D7S820	CSF1PO	D3S1358	THO1	D13S317	D16S539	D2S1338	D19S433	vWA	TPOX	D18S51	AMEL	D5S818	FGA
9	Reference From-Serena Seidell	10,13	27,28	8,11	10,11	14,16	7,9.3	12,13	10,11	20>25	13>14	14,16	8	14,15	X,X	11,12	19,24
11	Reference From-Taryn Christian	13,14	30>33.2	12	10,11	16,17	6,9.3	11,13	11,14	18,24	14,14.2	17,19	8,11	17	X,Y	12	20,21
14	Reference From-Vilmar Cabaccang	14,16	30	9,13	9[11]	16,18	8,9	10,11	10,11	[20,24]	13.2,16.2	15,19	8>11	14[20]	X,Y	11	19 [22]
	Reference Extraction Blank	[14]	NA	NA	NA	18[16]	NA	NA	NA	NA	[13.2]	[19]	NA	NA	NA	NA	NA
12	Hair Reference - James Hina Burkhart	13,15	28	11[14]	[12]15	15,16	7>9.3	12<13	9,11	[18,19]	15.2	15,19	11	19	X,Y	12	24,26
	Extraction Blank	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-1	Scene Swab (12)	14>16	30	NA	NA	16,18	[8]	NA	NA	NA	13.2,16.2	[15,19]	NA	NA	X>Y	11	NA
1-2	Scene Swab (12A)	14<16	[30]	NA	NA	16,18	8(9)	[10,11]	[10]	NA	13.2> 16.2	15>19 [17]	11[8]	[20]	X>Y	11	19 [22]
1-3	Scene Swab (12B)	14,16	30	[9]	[9]	16>18	8(9)	10[11]	[10]	NA	13.2,16.2	15>19	8>11	NA	X,Y	11	NA
1-4	Scene Swab (12C)	13	NA	NA	[12]	17	NA	NA	NA	NA	NA	[16]	[8]	NA	NA	NA	NA
2-1	Knife Blade	14,16	30	9,13	9,11	16,18	8,9	10,11 [12]	10>11	24[20]	13.2,16.2	15,19	8,11	14[20]	X,Y	11	19,22
2-3	Knife Handle	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-1	Screwdriver Head	14,16	30	9>13	9[11]	16,18	9(8)	10<11	10>11	20<24	13.2> 16.2	15,19	8,11	14,20	X,Y	11	19>22
3-2	Screwdriver Front Handle	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-3	Screwdriver Back Handle	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE OF RESULTS (continued)

ITEM	DESCRIPTION	D8S1179	D21S11	D7S820	CSF1PO	D3S1358	THO1	D13S317	D16S539	D2S1338	D19S433	vWA	TPOX	D18S51	AMEL	D5S818	FGA
5-1	Scene Swab (10)	14>16	30	9>13	9<11	16,18	8>9	10>11	10,11	20>24	13.2,16.2	15,19	8>11	14>20	X,Y	11	19,22
5-2	Scene Swab (10A)	14,16	30	9,13	9,11	16,18	8,9	10,11	10,11	20,24	13.2,16.2	15,19	8,11	14,20	X,Y	11	19,22
5-3	Scene Swab (11)	14,16	30	9,13	9,11	16,18	8,9	10,11	10,11	20,24	13.2,16.2	15,19	8,11	14<20	X,Y	11	19>22
5-4	Scene Swab (11A)	14<16	30	9<13	9,11	16,18	8,9	10,11	10>11	20,24	13.2,16.2	15,19	8,11	14,20	X,Y	11	19,22
6-1	Halter Top Area 1	14,16	30	[9]13	9[11]	16,18	8,9	10,11	10<11	20,24	13.2,16.2	15,19	8,11	14,20	X,Y	11	19,22
6-2	Halter Top Area 2	16[14]	NA	NA	NA	[16]	9[8]	NA	NA	NA	13.2 [16.2]	[19]	NA	NA	Y	[11]	[22]
6-3	Halter Top Area 3	NA	NA	NA	NA	[18]	NA	NA	NA	NA	[16.2]	NA	[8]	NA	NA	[11]	NA
6-C	Halter Top Control	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Extraction Blank	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7-1	Jacket-Left Sleeve	[13,14]	NA	NA	NA	[16]17	[6]	NA	NA	NA	[14,14.2]	[17]	[8]	NA	X[Y]	NA	NA
7-2	Jacket-Left Sleeve	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7-3	Jacket-Left Sleeve	[13]14	NA	NA	NA	16,17	[6,9.3]	NA	NA	NA	[13.2,14] 14.2	NA	[11]	NA	[X,Y]	[12]	NA

TABLE OF RESULTS (continued)

ITEM	DESCRIPTION	D8S1179	D21S11	D7S820	CSF1PO	D3S1358	THO1	D13S317	D16S539	D2S1338	D19S433	vWA	TPOX	D18S51	AMEL	D5S818	FGA
8-1	Baseball Cap-Brim	14,16	30	9,13	9[11]	16,18	8,9	10,11	10,11	[20,24]	13.2> 16.2	15,19	8>11	14,20	X,Y	11	19,22
8-2	Baseball Cap-Brim	14>16	30	[9]	NA	16,18	[8]9	[10]11	10,11	NA	13.2,16.2	15,19	8,11	NA	X,Y	11	19 [22]
8-3	Baseball Cap-Brim	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8-4	Baseball Cap-Brim	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8-5	Baseball Cap-Brim	14,16	30	[9,13]	NA	16<18	8,9	10>11	[10]11	NA	13.2,16.2	15>19	8,11	14[20]	X,Y	11	[19, 22]
8-6	Baseball Cap-Brim	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Extraction Blank	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Key:

NA	=	No activity.
( )	=	Weak results for types in parenthesis.
>	=	Greater than.
<	=	Less than.
X,X	=	Female DNA.
X,Y	=	Male DNA.
[ ]	=	Alleles in brackets are between 50 and 149 RFU. Because of the low activity of these alleles, it may not be possible to determine all of the genotypes at this locus.

EXPLANATION AND INTERPRETATION

Deoxyribonucleic acid or DNA is found in nucleated cells, e.g., white blood cells, salivary, vaginal and tissue epithelial cells and spermatozoa. The DNA can be extracted and the amount obtained is proportional to the number of cells present.

Human DNA consists of a number of genetic marker or typing systems. The genetic marker systems typed in this laboratory are independent of each other and therefore can all be used to differentiate one sample from another. Thus, if two samples originate from the same source, they will exhibit the same characteristics. Similarly, if two samples exhibit different types, they must have originated from two sources. DNA from different sources may also exhibit the same genetic markers due to the limited number of marker types possible; therefore, a statistical frequency of occurrence of any combination of types is often provided to indicate the approximate number of individuals in a relevant group who may have those same genetic marker types.

The typing system utilized by this laboratory relies on identifying small specific sections of DNA wherein there are recognizable differences between people. There may be an elimination of a person using these systems, and if sufficient systems are utilized an identification to the exclusion of all others may be possible. The advantage of this method is that it requires substantially less DNA than earlier methods, as the recovered DNA can be amplified (increased in amount) in order to obtain successful typing. The amplification uses the Polymerase Chain Reaction (PCR) method.

Short Tandem Repeat (STR) markers are polymorphic DNA loci that contain a repeated nucleotide sequence. The STR repeat unit can be from two to seven nucleotides in length. STR loci can be amplified using the Polymerase Chain Reaction (PCR) process and the PCR products are then analyzed by electrophoresis to separate the alleles according to size. These markers are subsequently detected using fluorescent dye labeling. The following are STR markers: Amelogenin (gender identification), THO1, TPOX, CSF1PO, D3S1358, vWA, FGA, D8S1179, D21S11, D18S51, D5S818, D13S317, D7S820, D2S1338, D16S539, and D19S433.

It is generally accepted in the scientific community that one of the biggest risks to PCR based typing is contamination. This can occur in three main areas: 1) In the field by either investigators or other persons in the vicinity through sneezing, coughing, shedding hair, sloughing skin, etc., 2) by laboratory personnel either by mixing samples or as per 1, 3) from amplified DNA product in the laboratory.

We cannot control the type of contamination in example 1. We control the type of contamination in example 2 by taking precautions and the use of a blank control. In example 3 there have been no instances of this type of contamination in this laboratory and the set up of the lab virtually guarantees that this will not occur.

EXPLANATION AND INTERPRETATION (continued)

The type of contamination in example 3 is prevented by taking handling precautions and by the design of the laboratory.

Because the PCR method can amplify very small amounts of DNA, contamination of the samples is always an important concern. Consequently, the reagents used in the extraction are themselves subjected to the entire extraction, amplification, and typing process without adding any DNA. This blank control should show no activity at the typing stage, thereby strongly indicating that contamination has **not** occurred. If any typing result is obtained, contamination could have occurred in the evidence samples.

In this case some DNA activity was found in the extraction blank associated with a first group of evidence stains (items 1 through 4). Subsequently where possible these items were resampled. The evidence stains in this case are badly degraded. This is due to age and/or bad storage. Consequently only incomplete or no DNA profiles have been determined in many samples.

CONCLUSIONS

1. All the seven swabs from the scene (items 1 and 5) have bloodstains that originate from the same source. Although all the profiles are not complete, in my opinion, the blood stains all originated from Vilmar Cabaccang but not Serena Seidell, Taryn Christian or James Burkhart. Item 1-4 is a control swab from the scene that shows the presence of trace amounts of DNA. No conclusion can be drawn regarding it's source.

2. Blood stains from the fork of the knife blade (item 2-1) and the head of the screwdriver originate, in my opinion, from Vilmar Cabaccang but not Serena Seidell, Taryn Christian or James Burkhart. No conclusions can be drawn regarding the limited activity found on the knife handle (2-2 and 2-3) or the screwdriver handle (3-2 and 3-3).

3. The bloodstain on the halter top (item 6-1) originates, in my opinion, from Vilmar Cabaccang but not Serena Seidell, Taryn Christian or James Burkhart. No conclusions can be drawn for areas 6-2 and 6-3 due to low levels of activity.

4. The DNA recovered from the stains 7-1 and 7-3 from the jacket is degraded and gives a limited profile. The profiles obtained are consistent with the profile of Taryn Christian but not Serena Seidell, Vilmar Cabaccang, or James Burkhart.

5. Only three of the six areas on the Baseball Cap (items 8-1, 8-2 and 8-5) resulted in DNA profiles. Although slightly degraded, in my opinion, the stains originated from Vilmar Cabaccang but not Serena Seidell, Taryn Christian or James Burkhart.

EVIDENCE DISPOSITION

The evidence will be returned to Maui Police Department. Residual DNA extracts and samples of reference material will be retained at SERI.

SEROLOGICAL RESEARCH INSTITUTE

Brian Wraxall
Chief Forensic Serologist

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